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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/526,217

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EXAMINER

STAFFORD, PATRICK

ART UNIT

PAPER NUMBER

2828

MAIL DATE

DELIVERY MODE

10/02/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

Application No.

10/526,217

Applicant(s)

MIKHAILOV ET AL.

Examiner

Patrick Stafford

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 03 July 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 6-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 6-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Amendment***

Claim 1 amended on 3 July 2007.

Claim 5 cancelled on 3 July 2007.

Claim 10 added on 3 July 2007.

Applicant's arguments with respect to claims 1-4, 6-10 have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4 and 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ota (U.S.

Patent 5,773,345, hereafter '345) in view of Lang et al (U.S. Patent 6,240,116, hereafter '116).

Claim 1: '345 teaches the semiconductor laser device comprising:

a semiconductor laser element or a host of individual lasers mounted in parallel with a host of exit surfaces from which laser light can emerge which in a first direction has greater divergence than in the second direction which is perpendicular to it (col. 20, lines 53-65 and Fig. 29, parts 116x, 116y, 116z);

at least one reflecting means which is located spaced apart from the exit surfaces outside of the semiconductor laser element or of the individual laser, with at least one reflecting surface

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of concave curvature (col. 20, lines 53-65 and Fig. 29 part 125) which can reflect back at least parts of the laser light which has emerged from the semiconductor laser element or the individual laser through the exit surfaces into the semiconductor laser element or the individual lasers such that the mode spectrum of the semiconductor laser element or of the individual lasers influenced thereby (col. 20, lines 53-65 and Fig. 29 part 125).

'345 does not explicitly teach the at least one reflecting means comprises a plurality of individual reflecting surfaces, each individual reflecting surface reflects one sub-beam being emitted from one individual exit surface. However, '116 teaches at least one reflecting means comprises a plurality of individual reflecting surfaces (col. 5, lines 25-30 and Fig. 1, part 30), each individual reflecting surface (col. 5, lines 25-30 and Fig. 1, part 20) reflects one sub-beam being emitted from one individual exit surface (col. 5, lines 25-30 and Fig. 1, part 27) in order to increase the condensing ratio. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have at least one reflecting means comprises a plurality of individual reflecting surfaces, each individual reflecting surface reflects one sub-beam being emitted from one individual exit surface in order to increase the condensing ratio.

Claim 2: '345 and '116 teach the semiconductor laser of claim 1. '345 teaches at least one reflecting surface can reflect back component beams of laser light onto the exit surfaces such that they are used as an aperture (Fig. 27, emitted from parts 116x, 116y, 116z).

Claim 3: '345 and '116 teach the semiconductor laser of claim 1. '345 teaches the semiconductor laser device comprises a lens means which is located between the reflection means and the semiconductor laser element or the individual emitters and which can partially

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reduce the divergence of the laser light in the first direction (col. 19, lines 1-37 and Fig. 24 part 118).

Claim 4: '345 and '116 teach the semiconductor laser of claim 1. '345 teaches the reflection means has a reflecting surface on which the component beams emerging from different exit surfaces can be reflected (col. 20, lines 53-65 and Fig. 29 part 125).

Claim 9: '345 and '116 teach the semiconductor laser of claim 1. '345 teaches the semiconductor laser element is exposed to a voltage (col. 16, lines 50-59) and is supplied with current for producing electron-hole pairs only in partial areas which correspond to the three-dimensional extension of the desired mode of the laser light (col. 19, lines 34-37).

Claim 10: '345 and '116 teach the semiconductor laser of claim 1. '116 teaches the plurality of individual reflecting surfaces reflects all of the laser light impinging on the plurality of individual reflecting surfaces (col. 5, lines 45-47).

Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ota (U.S. Patent 5,773,345, hereafter '345) in view of Lang et al (U.S. Patent 6,240,116, hereafter '116) and further in view of Scifres et al (U.S. Patent 4,656,641, hereafter '641).

Claim 6: '345 and '116 teach the semiconductor laser of claim 1. '345 teaches the semiconductor laser device comprises a beam transformation unit (col. 20, lines 29-40 and Fig. 27 part 121). They do not explicitly teach a beam transformation unit which is made especially as a beam rotation unit and can rotate individual component beams at one time by roughly 90°. However, '641 teaches a semiconductor laser comprising a beam transformation unit which is made especially as a beam rotation unit and can rotate individual component beams at one time

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by roughly 90° (col. 5, lines 22-32) in order for more selective tuning. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have a beam transformation unit which is made especially as a beam rotation unit and can rotate individual component beams at one time by roughly 90° in order for more selective tuning.

Claim 7: '345, '116 and '641 teach the semiconductor laser of claim 6. '345 teaches the beam transformation unit (Fig. 22, part 108) being between the reflection means (Fig. 22, part 104) and the lens means (Fig. 22, part 107).

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ota (U.S. Patent 5,773,345, hereafter '345) in view of Lang et al (U.S. Patent 6,240,116, hereafter '116) and Scifres et al (U.S. Patent 4,656,641, hereafter '641) and further in view of Austin (U.S. Patent 4,887,270, hereafter '270).

'345, '116 and '641 teach the semiconductor laser of claim 1. '641 teaches tuning the frequency in a laser cavity (Figs. 2), however it does not explicitly teach the frequency tuning means comprising a frequency-doubling element which is located between the reflection means and the semiconductor element, especially between the reflection means and the lens means. '270 teaches a semiconductor laser device with a frequency-doubling element which is located between the reflection means and the semiconductor element, especially between the reflection means (Fig. 1, part 21) and the lens means (Fig. 1, part 25) in order to output a frequency doubled wavelength. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have a frequency-doubling element which is located between

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the reflection means and the semiconductor element, especially between the reflection means and the lens means in order to output a frequency doubled wavelength.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick Stafford whose telephone number is (571) 270-1275. The examiner can normally be reached on M-Th 7:30-5 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MinSun Harvey can be reached on (571) 272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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